

A DESIGN OF SALES INFORMATION SYSTEM ON PAPER CUTTING MACHINE DISTRIBUTOR

Angelina Permatasari

Program Information System Audit, School of Information System,
Bina Nusantara University Jl KH Syahdan 9, Jakarta 11480, Indonesia
angelina_psw@binus.ac.id

Abstract: The purpose of this research is to analyze the problems that exist in a company engaged in the sales of paper cutting machine that is on sale systems that are running on the company, identifying the needs of enterprise information and designing information systems that are able to meet the company's information needs. The used methodology is the method of analysis and design methods. The analysis method is library research, observation, survey of the old system, the identification of information needs and interviews. While the design method used is Object Oriented Analysis and Design (OOAD). The achieved results are in the form of sales information system for paper cutting machine distributor in the form of application design to improve the sales system, which is still done manually. The conclusion is a computerized information system sales can solve problems that occur on the old systems and procedures in the company.

Keywords: Design; Sales Information System

INTRODUCTION

The faster a business grows the bigger resulting changes in the scale and scope of the company's activities. Therefore, the manager of the company that business is growing rapidly, generally experience greater difficulty in deciding or specify the type of change and evolution, which is required in order to support the growth rate compared to the company that growth is relatively small. One solution that can be done is developing new skills and abilities that will enable them to solve the problems by appointing new personnel or acquiring new resources, such as a new information system aimed at improving the efficiency and effectiveness of the company [1].

In fact many companies do not have adequate information system that is capable to support the growth of the company, so that the running business process becomes less effective and requires a lot of time. Even some companies still use manual system and the manual system often causes many problems such as the duplication of data, loss of data, and so forth.

The case study of this research is a distributor company that is specializing in the sale of paper cutting machines.

The purpose of this research is to identify the extent to which sales information system can be useful for paper cutting machine distributor in supporting the activities of the company.

The benefit of this research is to be able to know the lacks and weaknesses that are exist in the

running sales system since there is a complaint based on the observation that states existing procedures running too slow, so it hinders the performance of employees and in the end it results in reducing levels of customer satisfaction. This research is expected to be able to improve the effectiveness and efficiency in the company's sales cycle.

The changes of the information systems towards the old system are items on the company's operations and running business system including its infrastructure that have brought a positive impact on the improvement of operational processes and efficiency of the company. It results in decreasing and increasing of the operating costs and transaction costs in the turnover and profit [2].

METHOD

The used method are as follow; first is the analysis method, which is literature study, observation, old system survey, information analysis, interview, rich picture design and event table from the running system. Second is design method, it uses Object Oriented Analysis and Design (OOAD) that starts by making overview activity diagram, entity relationship diagram, use case diagram, database design, screen design and report design.

Theory

Information is data that has been changed into meaningful and useful context for the end certain user [3].

System is a group of related components, which collaborate to achieve the goals by receiving input and producing output in regular transformation process [3].

Information system is a group of related components in collecting or gathering, processing, storing and distributing information to support the decision making, coordination and controlling in a company [4].

Accounting information system is a subsystem from SIM that provides accounting and finance information, also obtainable information from routine processing on accounting transaction. SIA explores a large number of information about sales orders, sales in units of currency, cash collection, purchase orders, receipt of goods, wages, and working hours [5].

System design is the third phase of the system development cycle. The goal is to specify the physical reality of the system (forms, reports, tables, and others) and select suppliers[6].

Object-Oriented Analysis and Design is a set of general guidelines to make the analysis and design [7].

Rich Picture is an illustration that is used to describe the events that occur in the company's business processes [7].

Event can be understood as an event that takes place in a business process that involves actor(s) in it [7].

UML is modeling language software for specification, visualization, construction and documentation of information system[6].

Activity Diagram is a diagram that can be used to describe the business process flow; the steps of use case or logic object behavior [8].

Overview Activity Diagram is a diagram that describes the high-level view of the business process by documenting important events, the order and the information that accompanies the event[6].

In preparing overview activity diagram, there are several steps which are reading narration and identifying important events, recording narration clearly to identify events that are involved in it, describing the involved actor(s) in the business process, making each diagram of events and showing the sequence of events that occurred, describing the created and used documents in the business process and describing the flow of information from the document, describing the table files that are created and used in the business process and describing the flow of information from the files [6].

Workflow table is an activity that involves the coordinated implementation within an entity [9].

The design of the database is a design process that will support the company's mission and objective to the needs of the database system [9].

The design of the database consists of three stages: conceptual database design, database logical

design and physical design database [9].

Use Case diagram illustrates the interaction among the system and external systems and the user. In other words, Use Case diagram describes who will use the system and with what way the user wants to interact with the system. Besides that, Use Case is used textually to describe every step sequence from each interaction [8].

Entity Relationship Diagram is the end result of the analysis process of the being reviewed system that is done by a system analyst [10].

Sales is the amount charged to customers for the sold merchandise, either by cash or credit [11].

Form is the arrangement of a document that contains blank columns, where the user can fill with the data when the form is displayed on computer screen, the entered data in the columns are stored in one or more tables[6].

Screen (interface) is part of the limitation between the two interacting systems on the opposite side that communicate with each other [12].

Report is data that is displayed formatted and organized[6].

RESULTS AND DISCUSSION

Running System

Sales section receives the demand from customers either through telephone, email or fax. Then sales section sends the machine catalogue to customer that is adapted with the requested machine type. If the customer is a new customer, the sales section asks and notes the data of the customer. After the customer decides which machine they want to buy, the sales section will check the goods in the warehouse to know the availability of the ordered machine. If the machine is available, the sales will ask for advance money from the customer 20% from the goods' price. After the customer pays it, the sales will make machine sales letter as many as four copies and invoice as payment proof. The first copy will be given to the customer along with the invoice; the second copy will be sent to the warehouse; the third copy will be sent to the billing section; while the fourth copy will be kept as archives.

After receiving the machine sales letter from the sales section, the warehouse will check the bought machine by the customer to make sure the machine is in good condition before it sent to the customer. Then the warehouse makes expenditures letter and travel permit letter. Travel permit has 2 copies; machine sales letter with machine then it is sent to the delivery section while the expenditures letter will be archived as expenditure proof.

The delivery section will check the suitability between machine sales letter and travel permit letter from the warehouse. After it is suitable, the delivery section sends the machine to the customer. The sales

section asks the customer to sign the travel permit letter as proof that the machine has been received and the first copy of travel permit letter is given to the customer. The second copy of travel permit letter and machine sales letter are archived by the delivery section.

On the payment due date, the billing section will send the invoice to the customer based on machine sales letter from the sales section. After the

customer do the payment, the billing section will make redemption letter of 2 copies. The first copy will be sent to the customer as the payment proof, while the second copy will be archived.

Every end of the month, the sales section will check on sales data during a month and make monthly sales report, which then given to the manager to be checked.

Rich Picture Procedure of Running Sales

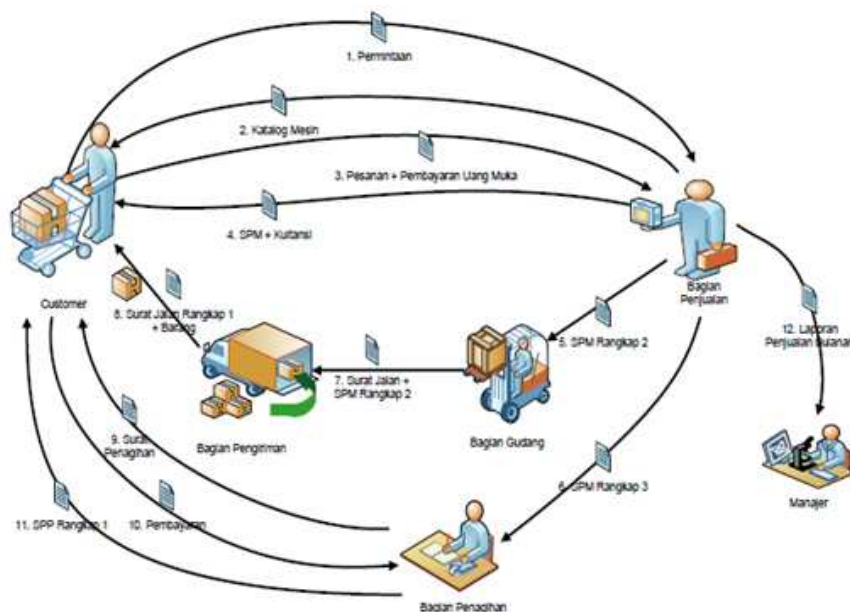


Fig. 1: Rich Picture Sales Procedure

Table 1. Event Table Sales Procedure

Event	Internal Agent (Assuming Responsibility)	Start When	Activity
1. Process the demand	Sales Section	Customer asks for the machine	<ul style="list-style-type: none"> Receive demand Send machine catalogue Note the data of customer Check the goods to the warehouse Ask for the advanced money from the customer
2. Receive the advanced money	Sales Section	Customer pays the advanced money	<ul style="list-style-type: none"> Receive the advanced money Make Machine Sales Letter (MSL) Make invoice Distribute the document to customer, warehouse and billing section
3. Prepare the goods	Warehouse	Receive MSL from the sales section	<ul style="list-style-type: none"> Receive MSL Check the machine Make expenditure letter and travel permit letter Send the expenditure letter and travel permit letter to the delivery section

Table 1. Event Table Sales Procedure (*continued*)

Event	Internal Agent (Assuming Responsibility)	Start When	Activity
4. Send the goods	Delivery Section	Receive MSL and travel permit letter from the warehouse	<ul style="list-style-type: none"> • Receive MSL and travel permit letter • Check the suitability between MSL and travel permit letter • Send the goods • Ask the customer to sign the travel permit letter
5. Send the invoice	Billing Section	Payment due date	<ul style="list-style-type: none"> • Send billing letter to the customer
6. Receive the redemption	Billing Section	Customer(s) do the redemption	<ul style="list-style-type: none"> • Receive the payment from the customer • Make Payment Billing Letter (PBL) • Send PBL to customer
7. Make report	Sales Section	End of the month	<ul style="list-style-type: none"> • Check sales data • Make the monthly sales report
8. Check Report	Manager	Receive report from sales section	<ul style="list-style-type: none"> • Receive the monthly sales report • Check the monthly sales report

Analysis of the finding survey:

1. Checking the goods to the warehouse is less effective.
2. Recording the transaction needs more time and often occurs the duplication of data, loss of data.
3. Hard to get information because the lack of integrity data.
4. Manual system runs slow so it hinders the performance of the employee.

Alternative Solutions:

1. Creating a technology-based application system that can help support the business processes in the company.
2. Improve data integrity so that the flow of information can be run quickly, especially when the information is needed to determine the next activity or to assist in decision making.

System Design

Overview Activity Diagram Proposed Sales Information System

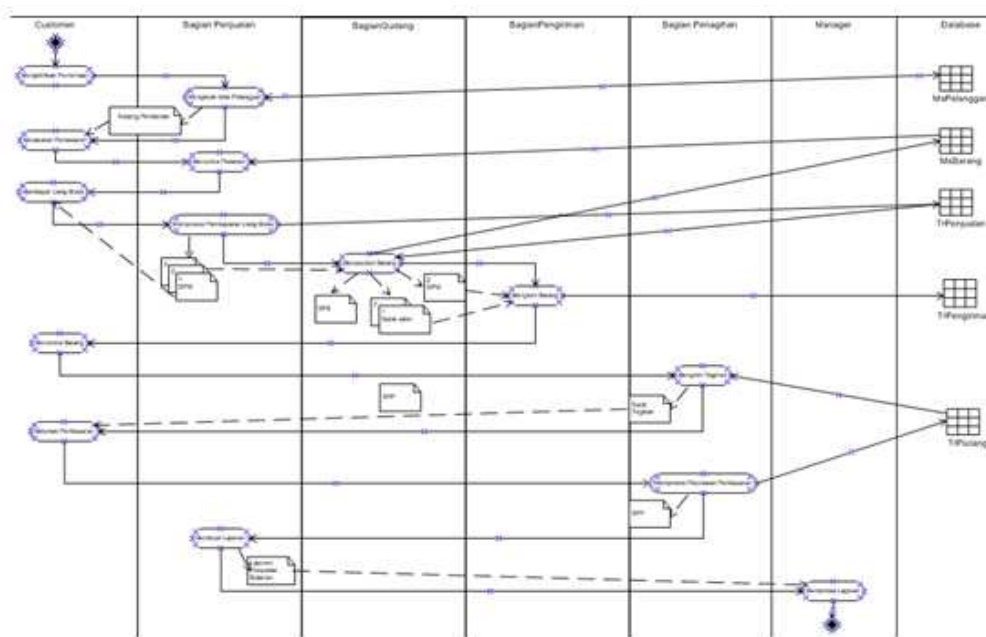


Fig. 2: OAD Proposed Sales Information System

Workflow Table Proposed Sales Information System

Table 2. Workflow Table of Proposed Sales Information System

Actor	Activity
Receiving Order	
Customer	1. Receiving demand through telephone, email, fax
Sales Section	2. Receiving customer's demand
	3. Sending machine catalogue
	4. Checking customer data on customer database
	5. Asking customer data (if new customer)
Customer	6. Giving customer data
Sales section	7. Inputting customer data on customer database
Computer	8. Saving customer data
Customer	9. Deciding the machine
Sales section	10. Checking the availability on the goods database
	11. Asking advanced money as 20% from the price
Processing Advanced Money Payment	
Customer	12. Doing advanced money payment
Sales section	13. Receiving advanced money payment
	14. Inputting order on sales database
Computer	15. Saving sales data
	16. Printing Machine Sales Letter (MSL) 3 copies
	17. Printing Invoice as payment proof
Sales section	18. Sending MSL 1st copy & Invoice to customer
Customer	19. Receiving MSL 1st copy & Invoice
Sales section	20. Sending MSL 2nd copy to Warehouse
	21. Archiving MSL 3rd copy
Preparing the Goods	
Warehouse	22. Checking Sales database on computer
	23. Checking the ordered machine
Computer	24. Doing the expenditure
	25. Printing the expenditure letter
	26. Printing travel permit letter 2 copies
	27. Updating the goods database
Warehouse	28. Sending travel permit letter 2 copies and the second copy of MSL to the delivery section
	29. Archiving the expenditures letter
Sending the Goods	
Delivery Section	30. Receiving 2 copies of travel permit letter and MSL 2nd copy from Warehouse
	31. Checking the suitability between travel permit letter and MSL
	32. Sending machine to Customer along with travel permit letter
	33. Recording delivery data on delivery database
	34. Receiving the ordered machine
Customer	35. Signing the travel permit letter
Delivery Section	36. Giving travel permit letter 1st copy to customer
Customer	37. Receiving travel permit letter 1st copy
Delivery Section	38. Archiving travel permit letter 2nd copy along with MSL

Table 2. Workflow Table of Proposed Sales Information System (*continued*)

Actor	Activity
Sending The Bill	
Billing section	39. Checking payment due date on computer and credit database
Computer	40. Printing the bill
Billing section	41. Sending the bill to customer
Customer	42. Receiving the bill
Receiving The Payment Redemption	
Customer	43. Doing the payment redemption
Billing section	44. Receiving payment redemption from customer
	45. Inputting payment redemption data on credit database
Computer	46. Saving payment redemption data
	47. Printing payment redemption letter
Billing section	48. Giving payment redemption letter to customer
Making Report	
Computer	49. Displaying all sales data sales in the related month
Sales section	50. Checking all sales data sales in the related month
Computer	51. Printing Monthly Sales Report
Sales section	52. Giving Monthly Sales Report to the manager
Checking Report	
Manager	53. Receiving Monthly Sales Report
	54. Checking Monthly Sales Report

Entity Relationship Diagram

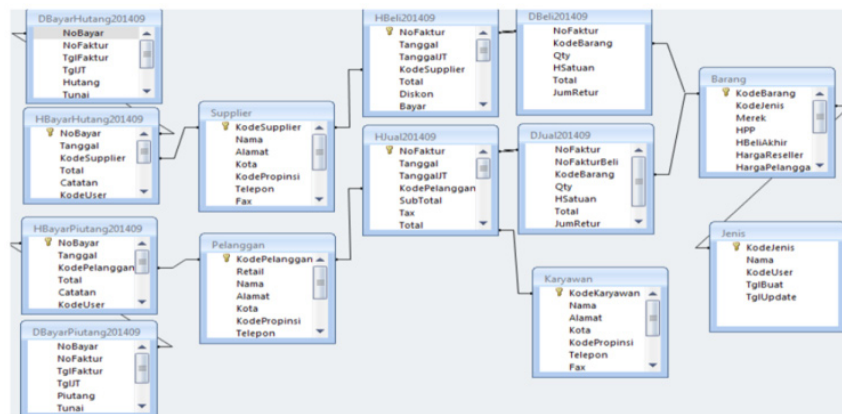


Fig. 3: Entity Relationship Diagram of Proposed Sales Information System

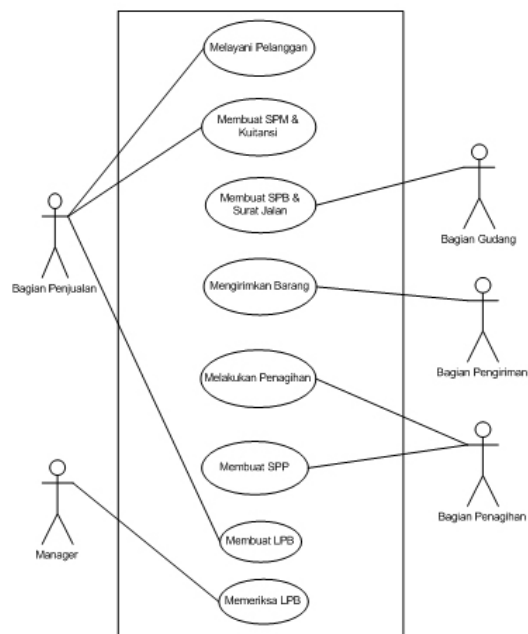


Fig. 4: Use Case Diagram of Proposed Sales Information System

The Design of Database

Table Name = MsCustomer
Primary Key = CustomerCode

Field Name	Data Type	Field Size	Description
Customer Code	Text	20	CustomerCode
Retail Name	Yes/No		“Retail” or “Reseller”
Address	Text	50	CustomerName
City	Text	50	AlamatCustomer
Province	Text	30	CustomerCity
Code	Text	10	CustomerProvince
Telephone	Text	50	CustomerTelephone
Fax	Text	50	CustomerFax
HP	Text	50	CustomerHP

Table Name = MsGoods
Primary Key = GoodsCode

Field Name	Data Type	Field Size	Description
GoodsCode	Text	20	GoodsCode
TypeCode	Text	10	TypeCode
Name	Text	50	GoodsName
ResellerPrice	Number	Long Integer	Purchasing Price
CustomerPrice	Number	Long Integer	SellingPrice
Qty	Number	Long Integer	GoodsStock
MinimumSaldo	Number	Long Integer	Goods Minimum Stock

Table Name = MsEmployee
Primary Key = EmployeeCode

Field Name	Data Type	Field Size	Description
EmployeeCode	Text	20	EmployeeCode
Name	Text	50	EmployeeName
Address	Text	50	Employee Address
City	Text	30	EmployeeCity
ProvinceCode	Text	10	Employee Province
Telephone	Text	50	Employee Telephone
Fax	Text	50	EmployeeFax
HP	Text	50	EmployeeHP

Table Name = HSell
Primary Key = InvoiceNo

Field Name	Data Type	Field Size	Description
InvoiceNo	Text	20	SalesCode
Date	Date/Time	Long Date	SalesCode
CustomerCode	Text	20	CustomerCode
EmployeeCode	Text	20	EmployeeCode

Table Name = DSell
Primary Key = InvoiceNo
GoodsCode

Field Name	Data Type	Field Size	Description
InvoiceNo	Text	20	SalesCode
GoodsCode	Text	20	GoodsCode
Qty	Number	Long Integer	Qty
Hunit	Number	Long Integer	SellingPrice

Table Name = HCreditPayment
Primary Key = PaymentNo

Field Name	Data Type	Field Size	Description
IPaymentNo	Text	20	PaymentCode
Date	Date/Time	Long Date	SellingDate
CustomerCode	Text	20	CustomerCode
Total	Number	Long Integer	PaymentTotal

Table Name = DCreditPayment
Primary Key = PaymentNo
InvoiceNo

Field Name	Data Type	Field Size	Description
PaymentNo	Text	20	PaymentCode
InvoiceNo	Text	20	SalesCode
Credit	Number	Long Integer	TotalBilling
Cash	Number	Long Integer	CashPayment
Transfer	Number	Long Integer	TransferPayment
BGCheck	Number	Long Integer	BGCheckPayment
Total	Number	Long Integer	PaymentTotal

Screen Design

The Log In screen has a title bar 'Log In'. It contains four input fields: 'Nama User' with the value 'ADMIN', 'Password' (empty), 'Bulan Aktif' with a dropdown menu showing 'September', and 'Tahun Aktif' with a dropdown menu showing '2014'. At the bottom, there are two buttons: 'Log In' with a blue icon and 'Keluar' with a yellow icon.

Fig. 5: Log in

The Master Pelanggan screen has a title bar 'Master Pelanggan'. It features a menu bar with buttons: BARU, UBAH, navigation arrows, HAPUS, CETAK, CARI, and TUTUP. The form contains fields for: 'Nama' (ALI SITORUS), 'Tipe' (Radio buttons for Retail and Reseller, with Retail selected), 'Alamat' (JL SULTAN AGUNG 106), 'Kota' (JAKARTA SELATAN), 'Propinsi' (dropdown menu), 'Telepon' ((021) 4568762), 'Fax' ((021) 4568763), and 'HP' (08176544342). At the bottom, a summary bar shows 'Jumlah Pelanggan : 3' and a red asterisk note '*] harus diisi'.

Fig. 6: Customer Master

The Master Barang screen has a title bar 'Master Barang'. It features a menu bar with buttons: BARU, UBAH, navigation arrows, HAPUS, CETAK, CARI, and TUTUP. The form contains fields for: 'Jenis' (dropdown menu showing ELEKTRIK), 'Nama Barang' (IDEAL 4850-95 EP), 'Harga Reseller' (189.200.000), 'Harga Pelanggan' (218.300.000), and 'Saldo Minimum' (0). At the bottom, a summary bar shows 'Jumlah Barang : 29' and a red asterisk note '*] harus diisi'.

Fig. 7: Goods Master

The Master Karyawan screen has a title bar 'Master Karyawan'. It features a menu bar with buttons: BARU, UBAH, navigation arrows, HAPUS, CETAK, CARI, and TUTUP. The form contains fields for: 'Nama' (EKO), 'Alamat' (JL MELATI 128), 'Kota' (BEKASI), 'Propinsi' (dropdown menu), 'Telepon' ((021) 99348900), 'Fax' (empty), and 'HP' (081345674230). At the bottom, a summary bar shows 'Jumlah Karyawan : 2' and a red asterisk note '*] harus diisi'.

Fig. 8: Employee Master

Form Penjualan

Menu: ADMIN | Tanggal: 30/09/2014 | No Faktur: FPL-201409-000003 | Total: **Rp. 190.399.000,00**

Pelanggan: BUDI SETIAWAN | Alamat: J. SUDAMAN 45 | Kota: BEKASI

Qty	Kode	Jenis	Nama	Hf/Resol	Subtotal
2	000001	MANJAL	DAKID 12x10	140.000,00	280.000,00
2	000002	MANJAL	DAKID 10x15	280.000,00	560.000,00
2	000004	MANJAL	IDEAL 1080	28.000.000,00	56.000.000,00
3	000002	ELEKTRIK	ROKAL R 4005 K	37.400.000,00	112.200.000,00
1	Y00001	MANJAL	YS 088	2.450.000,00	2.450.000,00

Kategori: KKD

Sub Total: Rp. 172.890.000,00
 Tax: Rp. 17.389.000,00
 Total: Rp. 190.279.000,00
 Bayar: Rp. 30.979.000,00
 Pelanggan: Rp. 8,00
 Sisa: Rp. 152.319.280,00

Jumlah Penjualan: 3 | **AKTIF** | *harus diisi

Fig. 9: Form of Sales

Form Pembayaran Piutang

Menu: ADMIN | Tanggal: 30/09/2014 | No Bayar: FPL-201409-000003 | Total: **Rp. 5.869.600,00**

Pelanggan: ALI SITORUS | Alamat: J. SULTAN AGUNG 106 | Kota: JAKARTA SELATAN

No. Faktur	Tgl. PT	Sisa Piutang	Tunai	Transfer	Cek / Bk	Total Bayar
FPL-201409-000001	30/09/2014	5.869.600,00	5.869.600,00	0,00	0,00	5.869.600,00

Keterangan: Catatan: Total Bayar: Rp. 5.869.600,00

Jumlah Pembayaran: 1 | **AKTIF** | *harus diisi

Fig. 12: Credit Payment Form

LAPORAN PENJUALAN
Periode: September 2014

No. Faktur	Tgl Faktur	Pelanggan	Nila Transaksi	Kat
1. FPL-201409-000001	30/09/2014	ALI SITORUS	Rp. 7.337.000,00	PIUTANG
2. FPL-201409-000002	30/09/2014	ASEP BUDIMAN	Rp. 42.100.000,00	PIUTANG
3. FPL-201409-000003	30/09/2014	BUDI SETIAWAN	Rp. 190.399.000,00	PIUTANG

Fig. 10: Sales Report

Daftar Barang

Cat. Berdasarkan: Nama Barang | Yang Dicar: | Jenis Barang: Semua | Lokasi: Gabungan

Kode	Jenis	Nama Barang	Qty	H Reseller	H Pelanggan
000001	MANJAL	YS 088	17	2.050.000	3.285.000
000002	MANJAL	DAKID 12x10	16	140.000	196.000
000003	MANJAL	DAKID 15x12	20	240.000	275.000
000004	MANJAL	DAKID 10x15	10	280.000	320.000
000005	MANJAL	EAGLE	0	3.500.000	4.200.000
000006	MANJAL	FELLOWES RUSION	0	900.000	1.200.000
000007	MANJAL	FELLOWES NEUTRON	0	450.000	600.000
000008	MANJAL	IDEAL 1038	5	5.760.000	6.075.000
000009	MANJAL	IDEAL 1080	0	28.000.000	35.000.000
000010	MANJAL	IDEAL 1110	10	38.500.000	44.350.000
000011	MANJAL	IDEAL 1134	10	1.095.000	2.240.000
000012	MANJAL	IDEAL 4305 + STAND	0	25.050.000	29.705.000
000013	MANJAL	IDEAL 4325 + STAND	0	79.200.000	87.540.000
000014	MANJAL	IDEAL 4705 + STAND	0	56.100.000	62.350.000
000015	MANJAL	PRO-DMA 470	0	9.300.000	11.250.000

Jumlah Barang: 29 | **Cetak** | **Tutup** | **Export ke MS Excel**

Fig. 11: Report of Goods' List

CONCLUSION

Every company always desires to grow and move forward. But the company growth will be better if it is supported by an information system that can support the complexity of company's activities. A good information system can help in handling every activity and transactions that occur with more effective and efficient and made through various steps of analysis and design so it is hoped the produced application can be suitable with the needs of paper cutting machine distributor company. The sales application can solve the duplication of data so the recording and also business process can run more smoothly and quick as it can give more value for the company.

Besides the sales system that has been computerized, another important thing to be noted is the role of system user. A good information system is impossible to run smoothly without the support of system user so the role of the user is an important factor in the success of the implementation. The given suggestion is conducting trainings for the user so it is hoped that the user can use the new information system. Besides that it should be done a maintenance and upgrade regularly to the sales information system, which has been implemented so the information system can follow the development of sophisticated technology from time to time.

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